

WHAT IS CLAIMED IS:

1. A bearing device comprising:

a shaft body; and

a rolling bearing mounted around said shaft body,

wherein said shaft body is provided at its free end with a caulked portion, said caulked portion being bent outward in a radial direction for pushing an end face of an inner ring of said rolling bearing, thereby preventing said rolling bearing from falling out, and

wherein a raceway surface of said inner ring of said rolling bearing is subjected to hardening treatment, and other portion of said inner ring is made of raw material which is not hardened.

2. The bearing device according to claim 1, wherein said inner ring is made of high-carbon chromium bearing steel or carbon steel for machine structural use as base material, and its raceway surface is subjected to hardening treatment by induction hardening.

3. The bearing device according to claim 1, wherein said rolling bearing comprises

a first inner ring fitted around an outer peripheral surface of said shaft body, said first inner ring having a single raceway groove and an end face of said first inner ring being

pushed by said caulked portion,

a second inner ring formed by said outer peripheral surface of said shaft body and having a single raceway groove,

a single outer ring having two rows of raceway grooves corresponding to said raceway grooves of both said first and second inner rings,

a plurality of balls arranged in two rows between said raceway grooves of both said inner rings and said raceway grooves of said outer ring, and

two crown-like retainers for respectively retaining the balls in said rows,

a raceway surface of said first inner ring being subjected to hardening treatment, and other portion of said inner ring is made of row material which is not hardened.

4. The bearing device according to claim 3, wherein said first inner ring includes an inner peripheral corner which is roundly chamfered.

5. A bearing device comprising:

a hub wheel including an annular plate and a shaft portion, and

a double row rolling bearing which is mounted around a shaft portion of said hub wheel, wherein

a wheel is mounted to said annular plate, said shaft

portion includes a large-diameter outer peripheral surface which is continuously formed on said annular plate, a portion of said outer peripheral surface closer to said annular plate is large in diameter, said annular plate also includes a small-diameter outer periphery which is continuously formed on said large-diameter outer peripheral surface and which is smaller than said large-diameter outer peripheral surface in diameter,

said double row rolling bearing comprises a first inner ring fitted around said small-diameter outer periphery of said shaft portion of said hub wheel and having a single raceway groove, a second inner ring formed by said large-diameter outer peripheral surface of said shaft portion of said hub wheel and having a single raceway groove, a single outer ring having two rows of raceway grooves corresponding to said raceway grooves of both said inner rings, a plurality of balls arranged in two rows between said raceway grooves of both said inner rings and said raceway grooves of said outer ring, and two crown-like retainers for respectively retaining the balls in said rows, a raceway surface of said first inner ring being subjected to hardening treatment, and other portion of said inner ring is made of row material which is not hardened,

a free end of said shaft portion of said hub wheel is provided with a caulked portion, said caulked portion being bent outward in a radial direction for pushing an end face of said

first inner ring of the rolling bearing, thereby preventing said rolling bearing from falling out.

6. The bearing device according to claim 5, wherein said inner ring is made of high-carbon chromium bearing steel or carbon steel for machine structural use as base material, and its raceway surface is subjected to hardening treatment by induction hardening.

7. A bearing device comprising:

a shaft body; and

a rolling bearing which is mounted around said shaft body,

wherein said shaft body is provided at its free end with a caulked portion, said caulked portion being bent outward in a radial direction for pushing an end face of an inner ring of said rolling bearing, thereby preventing said rolling bearing from falling out, and

wherein hardness of a peripheral region of an inner peripheral corner of said inner ring is set to a value capable of plastically absorbing a load at the time of caulking.

8. A bearing device comprising:

a shaft body; and

a rolling bearing which is mounted around said shaft body,

wherein said shaft body is provided at its free end with

a caulked portion, said caulked portion being bent outward in a radial direction for pushing an end face of an inner ring of said rolling bearing, thereby preventing said rolling bearing from falling out,

wherein said inner ring of said rolling bearing is entirely hardened by heat treatment in order to improve abrasion resistance and strength of the raceway surface, and

wherein a peripheral region of an inner peripheral corner of said inner ring is low-hardened by local quenching after said heat treatment.

9. The bearing device according to claim 7, wherein said inner peripheral corner of said inner ring is roundly chamfered with a predetermined radius of curvature,

said peripheral region of said inner peripheral corner is set as a region where a depth from said inner peripheral corner is equal to or greater than said predetermined radius of curvature and where a peripheral region of a raceway surface of said inner ring does not overlap, and hardness of said inner peripheral corner peripheral region is set equal to or less than that of at least said peripheral region of said raceway surface of said inner ring.